#16/Reply Brief

BOX AF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of: **A. KURAMATA et al.**

Group Art Unit: **2823**

Serial Number: **09/313,764**

Filed: **May 18, 1999**

Examiner: **W. Coleman**

For: **OPTICAL SEMICONDUCTOR DEVICE HAVING AN EPITAXIAL LAYER OF III-V COMPOUND SEMICONDUCTOR MATERIAL CONTAINING N AS A GROUP V ELEMENT**

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REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

BOX AF
Commissioner for Patents
Washington, D.C. 20231

March 28, 2002

Sir:

In response to the Office Action dated November 30, 2001, applicants request favorable reconsideration of the above-identified application. Claims 1-24 are pending. Claims 5 and 14-17 stand withdrawn from further consideration and claims 6-13 and 18-20 have been allowed.

Claims 1-3 and 21-23 were rejected under 35 USC §103(a) as being unpatentable over ***Edmond et al.*** in view of ***Nakamura et al.*** Favorable reconsideration is earnestly solicited.

The Examiner now refers to Fig. 1 of ***Nakamura et al.,*** whereas the prior Office Action had referred to Fig. 2. The Examiner highlights that ***Edmond et al.*** discloses a buffer layer 22 which may include a graded composition of silicon carbide aluminum gallium nitride as disclosed at column 5, lines 63 through column 6, line 6. This buffer layer may be substantially entirely aluminum gallium nitride at the portion further from the substrate. Although the Examiner acknowledges that ***Edmond et al.*** does not disclose the claimed carrier concentration,

the Examiner argues that ***Nakamura et al.*** would have rendered the claimed carrier concentration obvious. Applicants respectfully disagree.

In Fig. 1 of ***Edmond et al.,*** it is noted that AlGaN is used for the buffer layer and the electrode is provided on the bottom surface of the substrate. However, there is no reference of a carrier concentration.

Nakamura et al. forms the electrode on the topside of the substrate. Thus, there is no current across the interface. As such, ***Nakamura et al.*** is inherently irrelevant to the subject matter of the present invention of reducing the interface resistance.

In addition, in view of the feature of claim 1 controlling the carrier concentration in the layer adjacent to the substrate 1, it is submitted that the Examiner should make a comparison between the buffer layer 14 shown in Fig. 1 of ***Nakamura et al.*** and the buffer layer of the present invention, rather than comparing with the layer 22. With regard to the buffer layer 14, there is no description about carrier concentration level in ***Nakamura et al.***

Accordingly, it is respectfully submitted that the Examiner's ground of rejection is nothing but hindsight. The subject matter of the present invention would not have been derived from the teachings of ***Edmond et al.*** and ***Nakamura et al.***

Claims 4 and 24 were rejected under 35 USC §103(a) as being unpatentable over ***Edmond et al.*** in view of ***Nakamura et al.*** and further in view of ***Powell et al.*** ***Powell et al.*** is applied for its disclosure of crystal orientation. However, ***Powell et al.*** fails to provide the teachings or suggestion which the primary references lack.

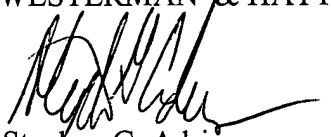
For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deems that any further action by applicants would be desirable to place the application in better condition for allowance, the Examiner is encourage to telephone applicants' undersigned attorney.

In the event that this paper is not timely filed, applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees which may be due with respect to this paper, may be charged to Deposit Account No. 01-2340.

Respectfully submitted,

ARMSTRONG, WESTERMAN & HATTORI, LLP



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Attachment: Petition for Extension of Time

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